

**The Appendix is an integral part of
Certificate of Accreditation No. 686/2024 of 18/12/2024**

Accredited entity according to ČSN EN ISO/IEC 17025:2018:

Vysoká škola báňská – Technická univerzita Ostrava
CAB number 1166.3, Energy Research Center, Testing Laboratory
17. listopadu 2172/15, 708 00 Ostrava - Poruba

Detailed information on activities within the scope of accreditation (tested subject) is given in the section „Specification of the scope of accreditation“.

Tests:

Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
1*	Determination of the mass concentration of CO ₂ , SO ₂ , NO _x , CO by automated analyzers (NDIR)	VECS 001, cl. 2, 4 to 6 (ČSN ISO 7935; ČSN ISO 10849; ČSN EN 15058; ČSN P CEN/TS 17405; ČSN ISO 21258)	Emission	-
2*	Determination of the mass concentration of nitrogen oxide (NO _x) by automated analyzers (chemiluminescence)	VECS 005 (ČSN EN 14792)	Emission	-
3*	Determination of the mass concentration of oxygen (O ₂) by an automated analyzer (paramagnetic method)	VECS 001, cl. 3 (ČSN EN 14789)	Emission	-
4*	Determination of total mass concentration of organic compounds expressed as total organic carbon (TOC) by automatic analyzers (FID)	VECS 007 (ČSN EN 12619)	Emission	-
5	Determination of the mass concentration of solid pollutants by gravimetry	VECS 003 (ČSN EN 13284-1)	Emission	-
6*	Determination of water vapour (condensation and absorption method, capacitance detector)	VECO 001 (ČSN EN 14790)	Emission	-
7*	Determination of pressure	VECO 002 (ČSN ISO 10780)	Emission, outdoor air	-
8*	Determination of temperature	VECO 003 (ČSN 25 8010:1989)	Emission, outdoor air	-
9	Determination of ash content by gravimetry, calculation of combustible matter (unburned residue)	VECO 004, excl. chap. 6 (ČSN ISO 1171; ČSN EN ISO 21656; ČSN EN ISO 18122)	Solid fossil fuels, solid biofuels, solid alternative fuels, solid combustion residues	-
10	Determination of ash content by thermogravimetry, calculation of combustible matter (unburned residue)	VECO 004, chap. 6 (ČSN ISO 1171; ČSN EN ISO 21656; ČSN EN ISO 18122)	Solid fossil fuels, solid biofuels, solid alternative fuels, solid combustion residues	-

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
11	Determination of Water Content by Gravimetry	VECO 005, excl. chap. 6 (ČSN 44 1377; ČSN ISO 579; ČSN ISO 687; ČSN EN ISO 18134-2; ČSN EN ISO 18134-3; ČSN P CEN/TS 15414-2; ČSN EN ISO 21660-3)	Solid fuels, solid biofuels, solid alternative fuels, solid combustion residues	-
12	Determination of water content by thermogravimetry	VECO 005, chap. 6 (ČSN 44 1377; ČSN ISO 579; ČSN ISO 687; ČSN EN ISO 18134-2; ČSN EN ISO 18134-3; ČSN P CEN/TS 15414-2; ČSN EN ISO 21660-3)	Solid fossil fuels, solid biofuels, solid alternative fuels, solid combustion residues	-
13*	Determination of velocity and volume flow of gas	VECS 008 (ČSN ISO 10780)	Emission	-
14	Determination of the mass concentration of persistent organic compounds (PCDD/PCDF, PCB, PAH) by calculation from measured values ⁴	VECS 009 (ČSN EN 1948-1; ČSN EN 1948-4+A1; ISO 11338-1)	Emission	-
15	Determination of the mass concentration of As, Cd, Cr, Co, Cu, Mn, Ni, Pb, Sb, Tl, V, Hg by calculation from measured values ⁴	VECS 010 (ČSN EN 14385; ČSN EN 13211)	Emission	-
16	Determination of the mass concentration of gases and vapours (HCl, HF, SO ₂ , ammonia) by calculation from measured values ⁴	VECS 011 (ČSN EN 1911; ČSN P CEN/TS 17340; ČSN EN 14791; ČSN 83 4728-1)	Emission	-
17	Determination of the mass concentration of volatile organic compounds (VOC) by calculation from measured values ⁴	VECS 012 (ČSN P CEN/TS 13649)	Emission	-
18*	Determination of the mass concentration of CO ₂ , SO ₂ , NO _x , CO, H ₂ O, TOC, N ₂ O, NO ₂ , HCl, HF, NH ₃ and SO ₃ by automated analyzers (FTIR)	VECS 013 (EPA Method 320; ČSN P CEN/TS 17337)	Emission	-

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
19*	Determination of mixture moisture and mass concentration of ammonia (NH ₃) by automated analyzer (TDLS)	VECS 014 (ČSN ISO 10155; (Manual to SICK analyzer GME 700-091)	Emission	-
20	Determination of the content of volatile combustible matter by gravimetry	VECL 001 (ČSN ISO 562; ČSN ISO 5071-1; ČSN EN ISO 18123; ČSN EN ISO 22167)	Solid fossil fuels, solid biofuels, Solid alternative fuels	-
21	Determination of gross calorific value and calculation of net calorific value	VECL 002 (ČSN ISO 1928; ČSN EN ISO 18125; ČSN EN ISO 21654)	Solid fossil fuels, solid biofuels, solid alternative fuels	-
22	Determination of carbon, hydrogen, nitrogen by combustion method with IR and TC detection of gaseous components, determination of oxygen by calculation	VECL 003 (ČSN ISO 29541; ČSN ISO 17247; ČSN EN ISO 16948; EN ISO 16948; ČSN EN ISO 16993; ČSN EN ISO 21663; EN ISO 21663; ČSN 44 1355)	Solid fossil fuels, solid biofuels, solid alternative fuels, solid combustion residues	-
23	Determination of total sulphur by high temperature combustion method with IR detection of gaseous components	VECL 004 (ČSN ISO 19579; ČSN ISO 17247; ČSN EN ISO 16993; ČSN EN ISO 16994; EN ISO 16994; ČSN EN ISO 21663; EN ISO 21663)	Solid fossil fuels, solid biofuels, solid alternative fuels, solid combustion residues	-
24	Determination of ash fusibility temperature	VECL 005 (ČSN ISO 540; ISO 540; ČSN EN ISO 21404; EN ISO 21404; TNI CEN/TR 15404; CEN/TR 15404)	Solid fossil fuels, solid biofuels, solid alternative fuels, solid combustion residues	-
25*	Determination of total mass concentration of mercury (Hg) in gas phase by automated analyzer (CVAAS)	VECS 015 (ČSN EN 14884)	Emissions	-

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
26	Determination of maximum explosion pressure, maximum rate of explosion pressure rise, lower explosion limit and limit oxygen concentration of dust clouds	VECB 002 (ČSN EN 14034-1+A1; ČSN EN 14034-2+A1; ČSN EN 14034-3+A1; ČSN EN 14034-4+A1)	Dust clouds	-
27	Determination of maximum explosion pressure and maximum rate of explosion pressure rise of gases and vapours of liquids	VECB 003 (ČSN EN 15967)	Gases and vapours of liquids	-
28	Determination of upper and lower explosion limit of gases and vapours of liquids	VECB 004 (ČSN EN 1839 cl. 4.5.2)	Gases and vapours of liquids	-
29	Determination of the limiting oxygen concentration for flammable gases and vapours	VECB 005 (ČSN EN 1839 cl. 4.5.3)	Gases and vapours of liquids	-
30*	Quality assurance of automated measuring systems	VECS 016 (ČSN EN 14181, cl. 6 QAL2, cl. 8 AST)	Automated emission measuring systems	-
31	Determination of bulk density using a measuring vessel by gravimetry	VECL 006 (ČSN EN ISO 17828; ČSN P CEN/TS 15401)	Solid biofuels, solid alternative biofuels	-
32	Determination of particle size distribution by gravimetry	VECL 007 (ČSN EN ISO 17827-2; ČSN EN 15415-1)	Solid biofuels, solid alternative biofuels	-
33*	Determination of H ₂ purity by OFCEAS, GC/MS and GC/TDC method	VECS 017 (ČSN ISO 19880-1: 2020; ČSN ISO 14687)	Hydrogen	-
34	Gravimetric determination of H ₂ purity	VECS 018 (ČSN ISO 19880-1; ČSN ISO 14687)	Hydrogen	-

¹ asterisk at the ordinal number identifies the tests, which the laboratory is qualified to carry out outside the permanent laboratory premises

² if the document identifying the test procedure is dated, only these specific procedures are used. If the document identifying the test procedure is not dated, the latest valid edition of the specified procedure is used (including any changes)

³ the laboratory does not apply a flexible approach to the scope of accreditation

⁴ laboratory determination of the analytes in the sample is carried out by an external test provider within the scope of its accreditation

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Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (tested subject)
1 – 8, 13 – 19, 25	Emissions – waste gas containing pollutants, released in atmosphere in a controlled way
9 – 12, 20 – 24	Solid fossil fuels – black coal, brown coal, coke
27 – 29	Liquids – combustible liquids with suspended solids and liquids prone to forming a surface film under the specific test conditions

Sampling:

Ordinal number	Sampling procedure name	Sampling procedure identification ¹	Subject of sampling
1	Sampling of persistent organic compounds (PCDD/PCDF, PCB, PAH) - isokinetic sampling with automatic or manual isokinetic control, filtration condensation method	VECV 001 (ČSN EN 1948-1)	Emission
2	Sampling for the determination of heavy metals (As, Cd, Cr, Co, Cu, Mn, Ni, Pb, Sb, Tl, V, Hg) - isokinetic sampling with automatic or manual isokinetic control and absorption into liquid	VECV 002 (ČSN EN 14385; ČSN EN 13211; ČSN EN 13284-1)	Emission
3	Sampling of gases and vapours (HCl, HF, SO ₂ and NH ₃) by absorption into liquid	VECV 003 (ČSN EN 1911; ČSN P CEN/TS 17340; ČSN 83 4728-2; ČSN EN 14791)	Emission
4	Sampling of organic compounds (VOC) by capture on a solid sorbent	VECV 004 (ČSN P CEN/TS 13649)	Emission
5	Sampling of solid pollutants (isokinetic sampling with automatic or manual isokinetic control)	VECV 005 (ČSN EN 13284-1)	Emission
6	Sampling of H ₂ to determine its purity	VECV 006 (ČSN ISO 19880-1)	Hydrogen

¹ if the document identifying the sampling procedure is dated, only these specific procedures are used. If the document identifying the sampling procedure is not dated, the latest edition of the specified procedure is used (including any changes)

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Explanations and abbreviations:

CVAAS	- Cold Vapour Atomic Absorption Spectrometry
EPA Method	- Environmental Protection Agency (USA) method
FID	- Flame Ionization Detection
FTIR	- Fourier Transformation Infrared Spectroscopy
NDIR	- Nondispersive Infrared Spectroscopy
OFCEAS	- Optical Feedback Infrared Spectroscopy
PAH	- Polycyclic Aromatic Hydrocarbons
PCB	- Polychlorinated Biphenyls
PCDD	- Polychlorinated Dibenzodioxins
PCDF	- Polychlorinated Dibenzofurans
GC-MS/MS	- Gas Chromatography/Mass Spectrometry
GC/TDC	- gas chromatography with thermal detection
TDLS	- Tunable diode laser absorption spectroscopy
TOC	- Total Organic Carbon
TZL	- Solid Pollutants
VECB	- Internal testing procedure in the field of safety
VECL	- Internal testing procedure in the field of fuels
VECO	- Internal testing procedure for other tests (e.g. basic parameters, temperature, pressure, concentration)
VECS	- Internal testing procedure in the field of combustion products
VECV	- Internal sampling procedure
VOC	- Volatile Organic Compounds

"This document is an appendix to the certificate of accreditation. In case of any discrepancies between the English and Czech versions, the Czech version shall prevail, both for the certificate appendix and the certificate itself. "